

Baker

9/25/18

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Signet
Don
Christie
Dennis Don

Gulf Ude - PN March 2018
Resp to Comts since there
is cont. case hearing req.

Treatment System

- ① → fine H₂O treat bef tailings basin
- ② → Seepage from tailing basin

Iron Solids prettation

Greensand filter

- ↳ Nanofiltration
- ↳ RO filtration

Baseline
Ditching ± 20% for return flow
to streams → treat only enough
as is req f augmentals

FEIS model → Gold Sims mass balance

Design model → Gold fret monting

→ Would run nanofiltral most of time
if the cd be reconnected w/ Sump

~~•~~ See

→ be pilot tested b/w NF & RO
of some + Sump waters for P's &

- \Rightarrow GPM ~ 2000 1-7 yrs (off 2 yrs const)
 in year 8 flow increases & up to max
 of 4000 gpm in yr 9-10
 & in yr 8/9 it's V to get H2O out
 of ponds bc ste l b full.
 - most water is coming from mine
 after first several years
 (from Colby Lk @ beginning)

Concentrations

- 600 mg/L Cu in yr 17
 600 mg/L sulf in yr 8
 \hookrightarrow first flush fm legacy

100^{wt} to 200 mg/L @ closure
 cu sulf when & is less infiltration
 due to cap

Greensand - pilot test results
 f ~ 2 yrs w/ spiked samples
 Cu 94.19% removal efficiency

Nest λ greater than 85% removal

As	Se	Mn
Co	Pb	Ni
		Zn

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to remove
99% sulf removal (99.3-99.5)
97-100% of other constituents
of metals from before
(conservative estimates)
NF → C to be as low as 70% removal
of some constituents but usually
in 90% range

in up I - almost all metals
in influent conc & below wgs

in up II - some are higher to wgs

Arsenic ^{influent} 24.5 - 10 ^{treated}

Cobalt 24.5 5 9.3

Copper 31.7 3.2

Lead 344 52

Nickel 58.5 100

hardness 337 10

Sulfate 337 10

Hg % remt target < 77%

Hard % 98.8

Sulf % 98.4

Hard % 59%

Boron % 42%

Copper % 9.3%

Makulor system

if V add flow

I use comb o NF + FO

Mercury

- filtral through taconite tailings
expected to remv Hg to 1.0 mg/L
 - bench testing o taconite tailings
 - Greensand filtration
Dome
 - Mem Sep
- 22 - 99.9% V b reported

Eagle RO

influent up to 2.5 mg/L
below 0.5 in effluent

Humbolt up to 4.0 mg/L

but conc o effluent s 0.5 mg.

lime granular

Calcite used @ end

spec of water treatment
has low Al conc.

NF f Hg → ^{reorder} GE does not v data
on Hg removal

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LTV & Polyomet tails 2007-2008
Appendix to RS 2019 by NTS

used conc from modeling as singular
value so did not do RP using TSD
apre ^{imposed} looked @

for 1st permit → MPCA does not typically
put in limits of WQS so long as
facility is built to remove to meet to
Long Prairie example of Hg

Kriste - tr & lots of uncertainty
in mine water quality & treatment
so isn't this difficult

Kyser - memt techn & proven &
used all over

Kriste - tes plants & RO & limits
in t permit

MDEQ includes limits of te or
present (Humboldt/Copperwood/Bailey)

Jeff ^{old} → to & expected quality
& to te struggle to find RP
& to l monitor in permit
→ not just Polyomet to need
evidence to make initial decs w/o
monitors

Richard

- Up ID table to showed
% to treat target \rightarrow 10 mg/L sulf

- & permit req treatment system to
build in accordance w/ application

Kevin

It's not usually way EPA permits
be we don't tell people how
to build

Scott Kysor

MPCTA wants to
consistently & include language
in permit

Richard

He did also box into treatment
bc couldn't deviate too far
from SIS

Brad

- He wd v to go back to SIS
if change too much

~~source~~ also concerned abt ant backslid
"there wd not be new informal"

Lawyer - Humboldt m permit did not
consider RCE & beginning so "not apples to
apples"

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* Eafe was closely ~~last~~ litigated

- Jeff Vld:

- lawyer

anti-backsliding is an issue
th is only narrow route
to loosening limits in the
future

- Krista → ~~is~~ is new information from ~~non-data~~
- Barbara

↳ don't believe the anti-backsliding
is as big a concern

- not a duality

- Brad "yes a litigable" if permit
backslid

- Mike Schmidt
↳ allowance for backsliding is
new informal except changes
to WQS so we are stuck

- Barbara
did EIS single out 10mg/L Subf
WQS

Richard

10 mg/L >

at min
at 10% Rb

Barbara Reports - included in permit
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So what's operable of enforcement

Jeff
can't anticipate everything so
has ability to be "living document"
- now say I follow permit modified
w/ MPCA review & approval of
ADM - will determine whether
major mod consistent w/
State rules
- Richard 7 or 8 parts of permit

Krista

↳ would this req corrective act?

Example

Krista 6.10.16-18

No disCHg to Surf H2O

- what's corrective act

Richard to be taken if not good

compreh Opras Report

we consider any corrective act
to be adaptive man.

Barbara proactive

ADM • corrective act is often to s. problem

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- discuss o whether it's for trench
construction & dredged & viol WQs

↳ te v to covered under GP f
SW

- Krista

also do we v diff o GP SW
vs indiv permit coverage?

until operat o WWTS
+ const sites
+ BMPs + demonstrated

- Old ^{cliffs} permit vs New permit cover

Permit Area Handout

MPCA said to r adding classification
to prevent aluminum sources
aft lime

+ to r adding iron mining
TBGLs

example of limits to WQBS
to removed if te find to be v
no RP

↳ I'm sure we do... this? ^{if way to} is that
Barbara - can we talk to permit M&L rego?

~~Changes to permit Wed Sept 2017~~

Clarify no dislg req in permit

- mine site no direct dislg
to Surf H₂O

- plant
no direct dislg to surf
H₂O

- Agile
Non locations
bed rock

Surf H₂O along corridor
△ in couple locals

- Limit

TV_C = 1 is included
extended to quarterly f
life of permit:
just bef the dislg → Cenix & fathrad.

- Reinserted Hg min strategy
↳ internal processes

- Reg constr as proposed on ^{Oct 2017} April
* PE Certified
* The constr meets design performance
* OHS manual file control

- ts → more prescriptive for normal
to v disc ts concept
- submit of "as built" diagrams
- Seep captr system
 - maintain inward gradient
 - to monitor more/ plan to fix & investigate cause
 - 7 days to restore inward gradient
 - worst case → would not migrate through barrier
 - no mon freq unless problem
 - prohibits f add o AL
 - Reduced notifical time of reporting o problems proposed
 - AM subject to review & approval & subject to review as to whether to → major modif o f UN law

- equalized ponds - need to be part o perform planning w/ PE cert.
- HRF
 - assmt has to be done by PE
 - HRF liner plan must discuss adeq o existg + proposed monitoring
 - have not done site investigation yet
 - will slip out concentrate until to build its
- Monitoring list
 - ^{add} total/dissolved frac
 - ↳ Strainer
 - ↳ GW
- Add TBEL f dis iron for
- dissolved Hg mon added for infl & effl + o trtmnt system
Not changing
- allowed desig (flow)
- Sewage trtmnt
 - o dikes & intervening trtmnt so not necessary

- sewage → tailings basin → Seep
Cather
treatment

- has standard reopener language
Jeff Smith - cd we beef it up?

Used - all data to comes in
to public

Citizens not able to petition
to reopen

Citizens can sue for violations
o WQS under State Law

- Barbara - wouldn't help us
on federal side
bc not included in permit

Jeff - we're thinking about
strengthening narrative
prohibits to add comfort

Mike Schmidt

- we've broader lang of prohib
WQS exceedences

→ General SW permits

365 505(g)(6) - Mike Schmidt believes in
a clear & concise
compliance

Barbara - still v. guests abt. fed
enforceability bc of
internal outfall

if tr were a WQSEL
we wdn't be having to
discuss

but tr s - lit risk
s to s - big issue for us

Linda - c we discuss to w/
OGC

Barbara - we c do ts

Krista
What does Polymet v to do if
he decide to change design?

~~double~~

req f permit mod? major -
minor

does language explain ts?

~~fiddly~~ AP - wd v to notify NEPA

Richard - may need to clarify ts
while building ts wd need to

do t same as above?

Issue - Econ Topical says I dig up to wach/BS

Mark - est limit w long ta pull drop
limit based upon real data → Wisconsin

Mark - how do we fit in
similar resonance possl

Shannon - fundamental diff in approach
do we need to agree or c
good prohibitions fix to fed
enforceability standpoint

Nair - step toward middle ground
detail n detail

- to vendors footnote performance
to say cannot guarantee

Richard - he looked @ ts closely

Karin
HS/As - w/ MPCs
consider operating limits
of other parameters
of those where conc = infl & go to

Hg - Canada w/ Q/C blues Hg
we need to do more

Jeff → & I discuss its w/ company

Kriste - EIS expects diff to
SL for GW pathway
so how did the prohibit
its

Richard - deal w/ to thru overall controls

Kriste - monitoring array of tr. permit
and issuance to prevent such

Richard - anal report will document
ts of "early warning"

if tr s - plume - tr wd b added
man & if tes r not successful
tr wd need permit coverage

Krista - so is ^{tr} disig prohibited

Richard - no ts s not prohibited

Krista

Richard General amt & spill
extent

EIG talked abt ts
dumpout techn & feasible
enhance lining / cover systems

Kevin - suggested to te upgrade
liners but te didnt do ts but
tr s techn.

Proposed
Permitting
DNR Dept. of
3rd W. O. Oct
no fee public
permits
45 days
but w/ 30 day
ext.
base
new
cover
new
concrete
tr
RGA
HFR
15 d new
proposed
permits

- Permit essential
- Hg operating limit - to feel uncomfortable conc.

401 same timeline

Annual avg of flow - no change
 Richard
 Red Dog mine
 would be v numeric limit of CER 440
 to calculate
 2.4 #

MPCA

95pcnt precip - stat max
 comp as ^{avg} evap (soaked)
 4.0 bil gallons / yr

GS Gold Sm max flow rate is 1.9
 bil gall / yr (3600spm)

4.0 is $2 \times$ max 1.9

if you actual w/ carryover
 it would be less

Cum overlf - permit to red to lower
 in way we wd do to
 & the expl wd be added to fact
 sheet

Krista - wasn't a clear limit on old permit

Richard - 2-7 yr lag from rainfall to
discharge @ mine site

1.9 to year 10

Kristen - but in no yr did exceed
4.0 kg/yr.

Richard (self) - he talk abt that
internally

Kristen

used max be str to use to 6
calc limits

adding word direct to disch prob fm
mine site

BREAK

Kevin

FML - proactive actions
- modified long
- But we're worried to be may
concerned prevent violation content

Richard - he look'd to but went to
be clean

- SW - Kevin
 - concerns w/ substl release -
 - Hg GP - no mon/limits or tr narrative prohibition
 - what kind o monitoring
wds b part o 401 monitoring
- Kevin
 - C t add b Sedint basins
& mon units SWPPP

Geff - tr → map o constr SW areas

Richard - SWPPPs r ve detailed

401 cert → monitor & incl long
f SWPPP/adsl sed ponds

Shannon - t I talk abt to more
& talk more w/ us on followup.

Jeff → t I send us temps
version

↳ will send us Cheat sheet
to crosswalk 2
verbs (word doc.)

Kern

- ↳ annual flow - consider adding max
- ↳ SWP/mon if constr SW
not disc w/ Peter
- ↳ add operating limits
- ↳ AM^{large} classified
- ↳ narrative problems of total fac

3rd wk's Oct 4 firm